DOLLAR STORE

Business Analytics 20/21

UNIVERSITAT DE BARCELONA

MARCO CIOMPI

SUMMARY

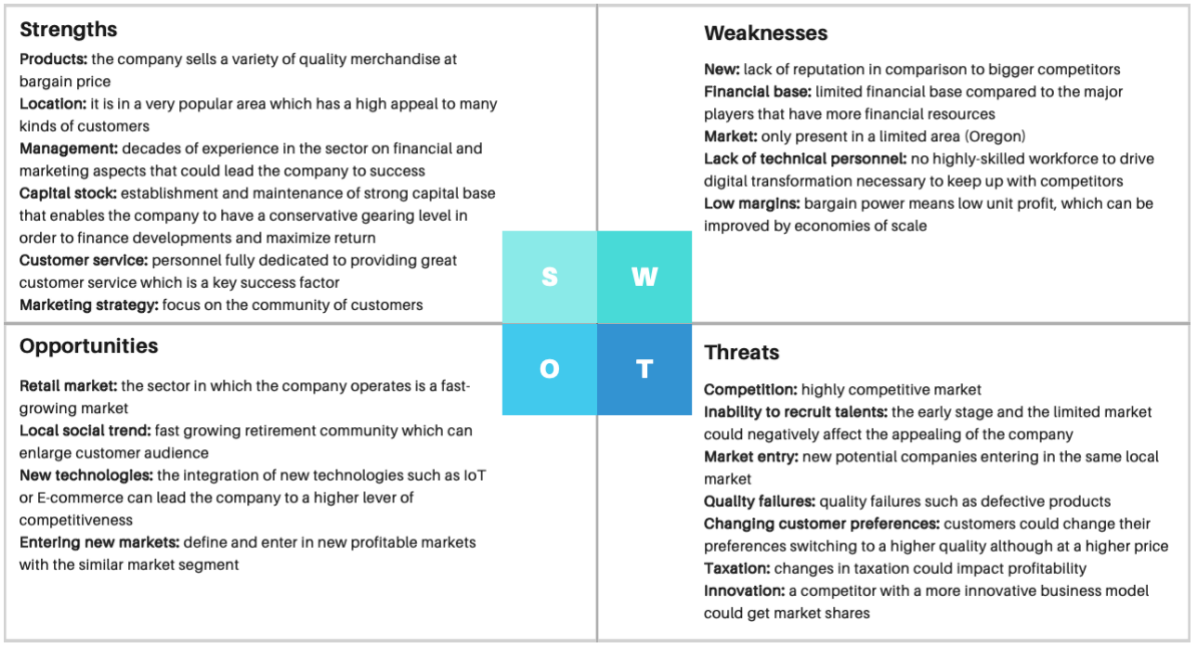
1. INTRODUCTION

The Dollar Store is a start-up retail store located in Oregon that provides attractive merchandise options at bargain prices. It is a privately held corporation with ownership Ted Brinkman (60%) and Jim Spencer (40%).
Regarding the business activities, the company sells products and provides excellent customer service for the general public that will lead Dollar Store to steadily grow in revenues in the next 3 years. One of the main factors of this forecasted growth is an aggressive marketing strategy which expects to increase its market share by offering a unique option to discount shopping.

In the scenario where retail companies are overwhelmed with so much data, business analytics applications and processes are essential to unlock hidden potential and take better decisions.
In the following analysis we are going to focus on internal and external factors of Dollar Store that can affect the company in current and future stages. Moreover, we will propose processes and possible applications that can be used by the company to integrate and exploit data in its business model.

2. SWOT ANALYSIS

In today's rapidly evolving marketplace environment in which unprecedented change and uncertainty predominate, digital transformation is not an option anymore. Not only are innovative technologies disrupting even traditional industries and driving companies to rethink the way they operate, the pace of change means the company culture needs to embrace constant uncertainty. To remain competitive in the long run, company leaders must do more than integrate new technologies, such as the use of big data, to stay ahead of digital disruption.
This holds even for the market segment in which Dollar Store operates. According to the forecasting, the market is expected to grow at a rate of 10% per year. Even though there is high competition, sales are expected to increase steadily as consumers will be encouraged to buy quality products at a bargain price.
In the following, we are going to analyze internal and external factors affecting Dollar Store as a starting point to find the best way to adopt and integrate big data in order to improve the positioning in the market.



3. DATA MONETIZATION

Data monetization refers to the process of using data to obtain qualifiable economic benefit. The highest-performing and fastest-growing companies in the market have adopted data monetization and made it an important part of their strategy to gain competitive advantage. No wonder then that data monetization, literally defined as the process of increasing the economic value of data, is becoming such an important and growing area for all businesses. The company can start treating data as an asset and gain the benefits from maximizing it value by including this practice in the business model.
How can *Dollar Store* monetize data?
The following applications can be used to convert data into value.

3.1 Structured

- Customer Relationship Management: *Dollar Store* could focus on the creation of a data warehouse to support the long-term business strategy in order to create a profitable relationship with specific customers through Business Intelligence applications. This can lead the company to a better-quality customer service which is one of the critical success factors in the sector. For instance, the company might be able to identify the best customers or might spot frequent patterns in the after-sales relationship with the client.

- Sales and Marketing Analysis: use the data warehouse to spot insights about profitability of each product and improve marketing campaign focusing on specific segments of customers. Among the possible types of analysis there are those by product, sales channel (in-store or online) or geographic area. Learning which customers contribute to the highest profits over time. This involves understanding not just how much a customer spends, but how many resources you dedicate to that customer in return. Moreover, this kind of insights can be useful for marketing purposes, such as running a more targeted advertising campaign focusing on the most loyal customer segments.

- **Customer analysis:** analyzing the behavior of customers can lead toa new market segment or a new geographic area to penetrate. For instance, it provides insight into an organization's customer base through *customer segmentation analysis* which allows the company to group similar customers into groups based upon characteristics that are common to the members of that group or can use *customer retention analysis* to track the number of customers that a company is able to keep from one-time frame to another. For instance, a new micro-segment in the "students" one can be spotted. Moreover, fidelity cards can be used to keep track and monitor the behavior of customers and their purchasing habits.

3.2 Unstructured

- Online reviews: the usage of online reviews can be used to improve customer relationship and to get closer to customer expectations and needs. O.R. can be seen as a useful source to get information for improving products. One example of how you can figure out the "bigger picture

problems" is using shopper insight analysis to see which words are most frequently used. By adding keywords to the analysis, you can make note of which rating specific words are most commonly found. For instance, if the keyword that refers to a particular aspect of a specific product appears in a significant portion of reviews, it suggests you should investigate the design or packaging of that product.

- social media data: the company could use unstructured data extracted from social media to create more complete and targeted advertising campaigns and merchandising models. Exploiting social media data can lead the company to a much higher understanding of its customer base. For instance, it could analyze social media feeds to identify which ad campaigns are successful and which are not, by analyzing customer feedback. Moreover, data extracted from social media can be used for sentiment analysis in order to understand better customer feedback towards its products. It can be used to analyze social media posts to track opinions and reactions, and ultimately improve customer service and experience.

- emails: the company could run an email marketing campaign or simply collect consumer email address to be used for future advertising. This means that huge amounts of unstructured data can be available. Although emails are semi-structured by category, the data within each email is unstructured. Text analysis models can scan through thousands of emails in seconds to extract customer information, organize by category and route to the proper department, track customer service quality and more. It can even find out what kind of language works best for customer communication and easily analyze to find out major customer pain points in just few minutes.

3.3 Real-Time

- Improvement of ongoing campaigns: using real-time data allows decision makers to improve and change rapidly ongoing campaigns. For instance, RT data can monitor performance of each campaign or target the appropriate demographics by honing in on their needs and preferences. Moreover, this kind of data allows the company to follow its customers through the entire conversion process and react accordingly to each touchpoint.

- Improvement of warehouse management: using real-time data allows decision makers to improve and change rapidly the inventory sorting process. For instance, RT data can be used to order a particular item from a supplier right after it's been detected a shortage.

- Real-time dashboards across the company: efficiently share KPIs across the company to involve employers and keep stakeholders up to date. Indeed, with this business intelligence practice that consists of gathering up-to-the-minute data and relaying it to users as it happens, managers and decision makers can easily take decisions when dealing with under heavy time constraints.

- Deliver personalized experiences to shoppers: people in the retail industry have realized how real-time technologies make it possible to provide highly personalized shopping experiences for

customers. Information given in real-time gives retailers a more in-depth understanding of the customers they assist. Based on the information provided about stock levels for instance, associates can avoid disappointing customers by discussing items that's not immediately available. By relying on the captured data, in-store personnel should find it easier to make product suggestions.

3.4 Predictive Analytics

- Sales forecasting: forecast future sales and look if a seasonality occurs in order to develop targeted marketing campaigns in specific periods. This can be achieved through the development of analytical models based on historical data that exploit data mining techniques to get insights from the future.

- predictive models for inventories: create models for better defining warehouse stocks needed for the future. For instance, the company can use analytical models to forecast the quantity of stocks needed at some point in the future.

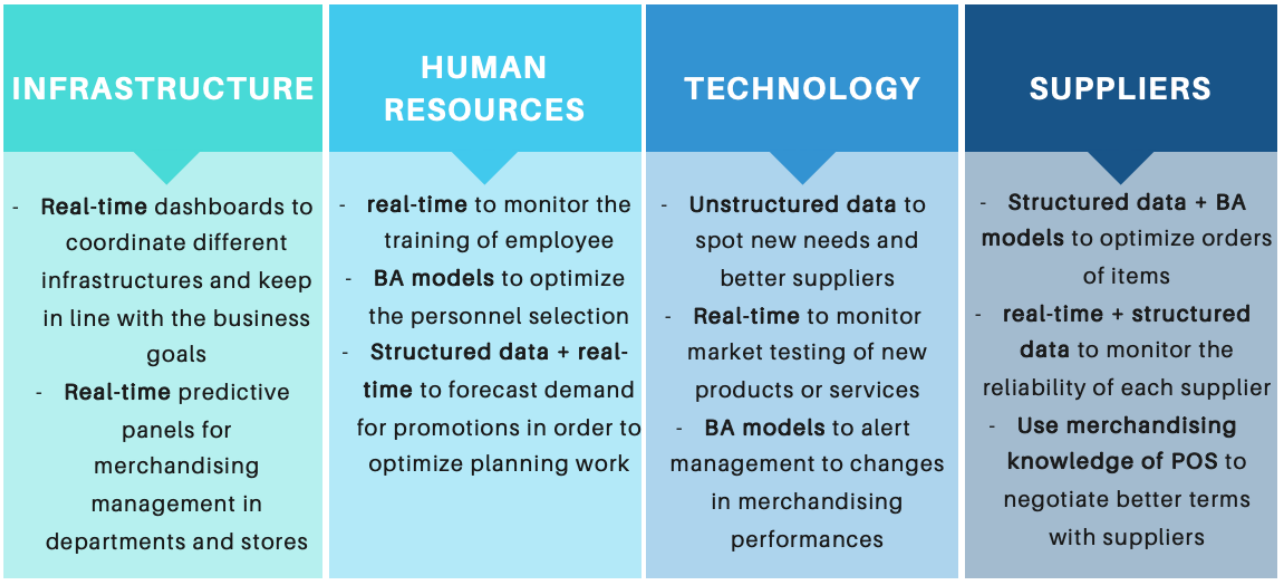
- clustering: spot customer segments to improve marketing campaigns. This is an unsupervised machine learning method of classifying data into structures that are more easily understood and manipulated. For instance, the company can use it for marketing purposes such as segmenting its audience.

4. VALUE CHAIN ANALYSIS

4.1 Primary activities

INTERNAL LOGISTICS	OPERATIONS	EXTERNAL LOGISTICS	SALES & MARKETING	SERVICE
- Use **real-time** to notify suppliers of possible shortages and monitor the situation of the warehouse in order to optimize internal logistics - Optimization of warehouse stocks by **structured data**	- **Structured data** (POS and RFID)to identify less-selling products - **Real-time** dashboards to optimize processes and keep stakeholders up to date - **Real-time** to deliver a personalized experience to customers	- **real-time** to monitor deliveries - **Unstructured data** to optimize merchandizing strategies - **structured data** to find best clients	- **Structured data** to gain knowledge about customers and develop more targeted campaigns - **Predictive analytics** to better target the audience - **Real-time** data to optimize ongoing campaigns and take fast decisions	- **structured data** to optimize customer service and CRM - **Unstructured data** to intercept potential problems with the product or service - **Real-time data** to speed up the after-sale service

4.2 Support activities



5. 5 FORCES MODEL ANALYSIS

One of the most powerful tools a business can use to ensure they are growing the right way is analytics. This tool can be used combined with the 5 forces model analysis which is useful for understanding the forces that shape the competition within an industry: in this case the retail market. Many retailers are now considering how to manage and leverage unstructured “big” data. Increasingly complex supply and distribution chains, plus constant pressure to contain costs and reduce margins, has driven the need for data analysis to incorporate partners and look at enterprise-wide signals more rigorously than before.
In this scenario the 5 forces that will be analyzed in a context of business analytics usage are the following:

- *threats of new entries:* the usage of Business Analytics could increase the entry barriers because it would be more difficult for new entrants to start to compete. One of the aspects that massively affects the size of the sector entry barriers is the customer engagement. In particular, retailers seek to understand which products, services, and offers are most attractive to customers, while customers continue to alter their preferences and shopping behaviors. Attracting, retaining and improving the value of customers has become a retail imperative; retailers are recognizing that new capabilities are required to capture and apply customer insights. That said, using business analytics applications can lead Dollar Store to an increase of quality in customer engagement and can help building customer loyalty, thus increasing entry barriers.

- *threats of substitutions:* the usage of Busines Analytics decreases this kind of market risk due to the fact that the customer experience behind the purchase of an item massively improve. In fact, customers do not base their purchasing habits on just the item, but instead they are driven by perceptions, feelings and opinions of a brand. Moreover, BA applications could improve the

customer service which is of the utmost importance in the retail industry, thereby increasing its perceived value.

- *Competitive Rivalry:* the usage of Business Analytics can positively affect the competitiveness of the company in the retail market, since it drives competitive advantage by generating economies of scale, economies of scope, and quality improvement. In particular, it enables differentiation which is a core factor for increasing market share. For instance, carrying out customer engagement assessment by applying analytics to determine underserved groups of customers with the likelihood to spend more, or customer churn prediction by building models to identify the customers most likely to attrite and determine the drivers and predictors of attrition to enable preemptive intervention.

- *Bargaining power of buyers:* the usage of Business Analytics can decrease the power of buyers due to the number of customers in the target market (high), the ability to substitute a highly tailored customer experience (low), the after-sales service and the degree of differentiation compared to competitors (high). In particular, the usage of this technology can lead the company to increase differentiation in its stores compared to competitors. Moreover, it can positively affect customer loyalty through the usage of big data in a context of customer relationship management and after-sales service. That being said, those characteristics could positively affect the bargaining power of buyers towards Dollar Store which might have difficulties in switching from one company to another.

- *Bargaining power of suppliers:* the usage of Business Analytics can help the company to gain power towards the suppliers. Retailers have a tremendous opportunity to leverage analytics to manage inventory, reduce transportation costs, and increase collaboration with customers, merchants, marketing and suppliers. According to the business plan at hand, the merchandising is purchased from a variety of well-know manufacturers such as P&G, General Mills and American Greetings which put the company into a weak position due to the strength of those supply companies. Nevertheless, spotting new cheaper suppliers combined with product sales analysis to find the most profitable items and properly manage inventories could lower the bargaining power of big companies such as P&G leading the company to get more advantageous contractual conditions.

6. MARKETING MIX AND THE 4 P'S MODEL

Marketing is about reaching the right customer at the right time, and the marketers that really know their customers are often the ones achieving the most success understanding how big data works allows marketers to predict purchases, analyze customer behavior and better understand the people buying their product or services.
The marketing mix helps the company define the marketing elements for successfully positioning its market offer. One of the best-known models is the 4Ps of marketing, which support the design of marketing options in terms of product, place, price and promotion. Companies are finding a

better way to customize their marketing by using Big Data to better understand preference, prediction, personalization, and promotion.
In the following we will look at how business analytics can help marketers define the 4Ps previously mentioned:

- *product:* business analytics can help Dollar Store to identify the perfect mix of products that customers are looking for and willing to purchase. The company sells variety of quality discount merchandise. The types of merchandise it will carry will include items such as dishware, household goods, toys, cosmetics, candy, greeting cards and others. That being said, one of the applications is the analysis of data from social media to gain insights from customers in terms of emerging needs and competitor weaknesses. In this case the company can find innovative ways to differentiate its products and try to match customer expectations. Moreover, big data is critical in creating the personalize experiences customers expect as well as the after-sales service. In fact, organizations in retail industry are now competing on experience, and without big data analytics, emerging in this sector won't get any easier.

- *price:* business analytics can help company to design a perfect pricing strategy. For instance, the ability to run advanced scenario modeling to avoid costly mistakes or missed opportunities – for example, the potential impact of a pricing change on demand and profitability. Analytics enables companies to dramatically improve profitability by developing optimal pricing strategies to win more contracts and offer the most value to customers. Combining with analytics allows the company to leverage its data to understand both the internal and external factors affecting profitability at a granular level. Moreover, getting insights from the customer perspective in terms of perceived value can help the company to set the price, as well as getting feedback loops so pricing teams can assess effectiveness and adjust as needed. Other application could be the usage of shared dashboards across the company in order to monitor the impact of discounts on profitability.

- *place:* using Business Analytics can lead the company to a deeper understanding of its target market, thus figuring out where they look for merchandising items. The usage of structured data and predictive model, as well as unstructured ones, can massively improve the reachability of potential buyers. One of the applications could be the identification of sponsored events through social media that could introduce the company to a new audience. Moreover, using structured data to target customers could lead the company to intercept locations for a new stores.
Competitor analysis through analytics can be helpful to understand where competitors are placing their own services/products. Another aspect that could be improved by BA is the optimization of SEO and the development of an effective email marketing campaign

- *promotion:* the usage of business analytics can optimize the promotion of products in the sales channel. In this case the company can use structured and unstructured data to monitor the performance in different channels (online/ offline) and invest more in those that are more profitable in terms of engagement and conversion rate. Moreover, real-time data can be helpful in modifying ongoing campaigns. Given that customers may expect promotions, it is important for retailers to

understand their customer's purchasing behavior and to determine the right promotion policy for each context. The objective is to maximize the expected profits during the upcoming selling season by deciding which products to promote, the promotion depth, and when to schedule the promotions. Regarding the scheduling, forecasting models can spot seasonality in particular timeframes, which lead the company to enhance its promotions during that period.

7. SOCIAL MEDIA ANALYTICS.

The increasing interest in social media data has led to growing demand for social media analytics (SMA). Having robust SMA can help firms create value and achieve competitive advantages. However, most firms do not always know how to embrace big social data to establish a path to value. When visiting a B2C Marketer's brand profile on Facebook and Twitter, it becomes obvious that consumers use these social media platforms to publicly submit their inquiries to the company and share their subjective and honest opinions about various topics, related to a company. They express their criticism, praise, suggestions and expectations, related Dollar Store, via self-generated status posts, likes, comments or shares. By integrating social media activities and analyzing consumer-generated data, the company can have an outstanding opportunity to gain consumer insights by being able to optimize business departments' strategies and operations to fulfil consumer needs and expectations.
Social media data can be transformed in value by Dollar Store through opinion mining or sentiment analysis which are important tools of SMA that analyzes people's opinion, sentiment, evaluation, attitude, judgement and emotions towards its products or services and other competitor product. Moreover, SMA can be used to discover trend in the industry, such as product demands, consumer insights, and service quality. It can help the decision makers to predict the future behavior or trend of an entity based on historical data.
Other applications using SM data can be related to predictive analytics to understand the possible behavior of customers and competitors (benchmarking) in the future, such as advertising, churn prediction and competitive analysis.

The benefits brought by the use of social media data along the value chain are massive.
One of the primary activities that can be positively affected is sales & marketing which can exploit this kind of data to better match customer expectations and adapt advertising campaigns based on insights extracted from them.
Another primary activity could be the operational one which can exploit insights gained from social media to model and design a customer experience that responds to customer needs.
Moreover, Service primary activity can use SM data to intercept potential problems with services and to better understand what customers want in an after-sale service or support.

Overall, SMA has become an indispensable tool for organizations such as Dollar Store to master in order to succeed in today's market.

8. IoT ANALYTICS.

The success of IoT analytics lies in a constant sharing of information between the objects, sorting and organization of the various data points for meaningful analysis and sensing the pulse of the

customer for taking timely decisions. Retailers are using IoT technology to enhance customer experience, reduce costs, drive growth and improve overall performance.
There are different ways in which retail industry can use IoT technology. For instance, sensors could be used to monitor customer satisfaction, provide supply chain insights and track assets.
First of all, Dollar Store could use IoT to enhance customer satisfaction. IoT sensors connected to a dashboard or set of color-coded bottoms allow stores to collect customer feedback immediately after the shopping experience. This data provides real-time shopper satisfaction insights that can improve in-store customer experience.
Second of all, IoT can be used by the company to monitor goods throughout the entire supply chain. Tracking systems report valuable data such as location, temperature, humidity, shock and tilt, providing insights into quality control and traceability. Tracking solutions help determine if materials are safe, delivered on time, and transported in ideal conditions - all data that can help retailers make their transport logistics more efficient, reduce product damage and avoid loss.
Last but not the least, asset tracking. The company can use IoT technology to track lost shopping carts and baskets. Tracking these assets can help stores reduce the cost of having to replace them. By placing sensors on these assets, Dollar Store can track them to their exact location and receive status updates and alerts if they're damaged.

That being said, IoT can massively improve the different activities along the value chain such as internal logistics, sales & marketing and service. Beyond providing insights and helping to manage inventory more efficiently, IoT systems can relieve this task from the workload of human employees, saving the business money because fewer staffing hours will be spent tracking inventory. IoT solutions will instead allow employees to focus on the core tasks of running the business.
We can conclude saying that the IoT ecosystem can lead the company to an higher level of competitiveness thanks to aggregated data that can drive innovation, research, and marketing, as well as optimize the services that generated it.

8. ORGANIZATION

Thanks to Digital Transformation every industry is going through an exciting phase. The goal of data-centric organization is to design and build a digital business, where data and information are sentient to every actions; an organization where every business process yields data and helps in business decision-making. People, technologies and processes are designed and developed with a clear intent of generating relevant information and using it collaboratively to enhance the business success of an organization. In this context, Dollar State should move its focus on building tools, abilities, and most importantly, a data culture that puts data at the heart of decision making.
More than most industries, retail has been disrupted by a shift to digital. Further, the challenge of meeting consumers' rapidly changing preferences and expectations has been accelerating over the past years. It is now critical for retailers to become data-centric to provide personalize offers, omni-channel experiences, mobile optimization and experience-based commerce.

The best organization model definable for Dollar Store is the centralized model in which data are managed by one core team of analysts. With a centralized analytical model, how models and processes are executed can have stronger oversight from the core data analytics team outsourcing their efforts to the entire organization. Although this model carries the promise of an integrated data infrastructure and the economies of scale, it will not be able to provide the agility and flexibility that is required to keep analytics relevant within the business.
That being said, the choice of a centralized model is dictated by the lower initial investments compared to a decentralized model, which is more in line with the early size of Dollar store.
However, the company could evaluate to switch to a decentralized model when it gets more structured in order to gain more flexibility and agility,

8. CULTURE

A data-driven culture embraces the usage of data in decision making. It treats data as a strategic asset of the company by making data widely available and accessible. It focuses on capturing, cleaning and curating meaningful data from across the business. Data-driven cultures bring transparency and accountability to the whole enterprise.
One useful tool that can be used to manage cultural change in the organization is the "strategic agenda" which summarize the different steps towards a data-driven culture.
In the following part 8 steps towards cultural change will be highlighted:

1 Set data-driven goals: in order to integrate data into its strategies, the company will need to set goals for its data and parameters for how it will influence its decisions.

2 Right access to data: who use data across the company? Every area of the company can benefit from using data. A big mistake that should be avoided is giving one section of the company access to data while leaving the rest of the team with nothing.

3 Define metrics: every department has its own needs, so it's better to decide valuable metrics backwards. For example, sales metrics such as revenue or sales funnel.

4 define who collects data: having a central system for all the data is a good start. Analysts within the organization can look at the data stack as a whole and feed relevant analysis and trends back to heads of departments.

5 use the right tools to analyze data: there is a massive collection of tools out there that can help the company get the most out of its data. Using the right tools can turn its data into beautiful and readable charts that make data accessible to anyone who needs it.

6 train personnel: to get the most out of the data available, the company need to train its staff in data literacy.

7 hire data experts: hiring qualified consultants can improve all aspects of the business and give the company a sustainable model for the future

8 update data regularly: customer habits, spending, and responsiveness to various marketing techniques can change over a short time

Sources:

A. Albano, S. Ruggieri. Decision Support Database Essencial, University of Pisa, 7 June 2020

Dollar Store *Business Plan*

https://www.capgemini.com/2015/07/internet-of-things-for-service-industry-iotsi/

https://www2.deloitte.com/content/dam/Deloitte/ch/Documents/consumer-business/ch-cb-en-Deloitte-Analytics-in-retail-0514.pdf

https://www.textroad.com/pdf/JAEBS/J.%20Appl.%20Environ.%20Biol.%20Sci.,%207(4)131-135,%202017.pdf

https://maxccohen.github.io/Promotions-Practice.pdf

https://searchcustomerexperience.techtarget.com/definition/CRM-analytics

https://www.lntinfotech.com/wp-content/uploads/2020/07/Data-Centric-Organization-A-New-Paradigm.pdf

https://www.idashboards.com/blog/2019/11/20/centralized-vs-decentralized-analytics/